CHAPTER 5
TRIGONOMETRIC RATIOS

NOTES

TRIGONOMETRIC RATIOS:

The ratios of the sides of a right triangle with respect to its acute angles are called trigonometric ratios of angles. There are six such trigonometric ratios. They are sine, cosine, tangent, cosecant, secant and cotangent of an angle θ. In short, they are written as $\sin\theta$, $\cos\theta$, $\tan\theta$, $\cos ec\theta$, $\sec\theta$ and $\cot\theta$ respectively.

We have,

$$\sin\theta = \frac{BC}{AC} = \frac{opp.}{hypo.}$$

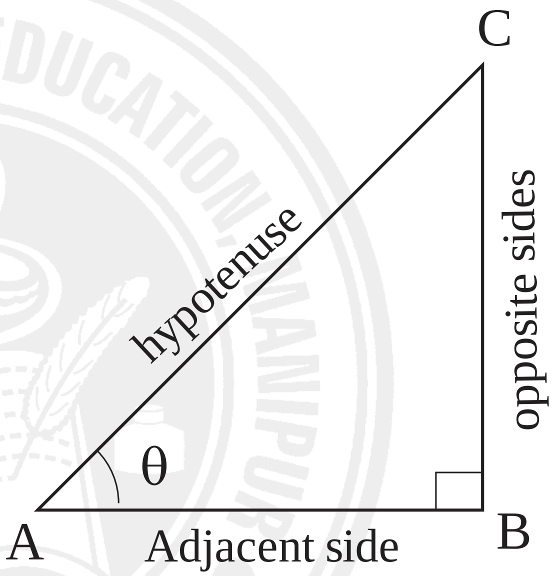
$$\cos\theta = \frac{AB}{AC} = \frac{adj.}{hypo.}$$

$$\tan\theta = \frac{BC}{AB} = \frac{opp.}{Adj.}$$

$$\cot\theta = \frac{AB}{BC} = \frac{adj.}{opp.}$$

$$\sec\theta = \frac{AC}{AB} = \frac{hypo.}{adj.}$$

$$co\sec\theta = \frac{AC}{BC} = \frac{hypo.}{opp.}$$



RECIPROCAL RELATIONS:

1. $\sin\theta = \dfrac{1}{\cos ec\theta}$

2. $\cos\theta = \dfrac{1}{\sec\theta}$

3. $\tan\theta = \dfrac{1}{\cot\theta}$

1. THREE IDENTITIES:

(i) $\sin^2\theta + \cos^2\theta = 1$

(ii) $1 + \tan^2\theta = \sec^2\theta$

(iii) $1 + \cot^2\theta = \cos ec^2\theta$

2. QUOTIENT RELATIONS:

(i) $\tan\theta = \dfrac{\sin\theta}{\cos\theta}$

(ii) $\cot\theta = \dfrac{\cos\theta}{\sin\theta}$

****